Building resilience to climate change through a landscape design approach

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Abstract: In the uplands of northern Lao PDR, the EFICAS project (Eco-Friendly Intensification and Climate resilient Agricultural Systems), promotes climate change adaptation approaches based on a combination of participatory land use planning and promotion of agroecological practices. A major challenge for communicating integrated landscape approaches is to reach a good understanding of the interconnectedness of agroecological key concepts among local communities as landscape approaches are, unlike commodity focused approaches, more complex with less direct benefit to the individual. The EFICAS project aims at providing this knowledge to communities, enabling them to manage their resources more effectively based on a deeper understanding of the interrelations between the landscape and their livelihoods. Different participatory methods including spatially explicit visioning based on a 3D model of the village are used to engage village communities in intentionally influencing village land use trajectories towards more desirable land use patterns in terms of their resilience to climate change. Land use plan and resource management rules are negotiated collectively so as to adapt generic agroecology principles to the specificities and singular trajectory of each village.

Keywords: landscape design; participatory approaches; agroecology, upland development, Lao PDR

Introduction

In the northern uplands of Lao PDR farmers involved in the transition from shifting cultivation to commercial agriculture are negatively impacted by climate change, price fluctuations for both agricultural inputs and outputs and land degradation due to unsustainable cropping practices such as subsistence-based shifting cultivation systems with short fallow periods (i.e., less than five years) on the one hand or market-oriented intensive cropping practices based on mechanized tillage and herbicide use, on the other hand. Alternative agroecological practices exist that can buffer the negative effects of agricultural intensification while preserving natural resources. However, adoption by upland farmers of these innovative techniques such as conservation agriculture is not a straightforward process (Lestrelin et al., 2012). Impact studies have shown that in the absence of project support in the form of e.g. technical advices, incentives to good practices, service provision like direct-sowing planted on mulch, many farmers discontinue agroecology practices despite clear recognition of their benefits in terms of both productivity gain and soil fertility management. In such a context, the EFICAS Project is tackling the challenge of knowledge transfer and dissemination of landscape approaches to agroecology.

Methods

After an initial period of diagnosis on land use trajectories and their driving forces in twelve target villages located in the three provinces of Houaphan, Louang Prabang and Phongsaly, major development issues were prioritized with local stakeholders (e.g. through problem census and vulnerability assessment) and pathways to improved resilience to climate change were explored with village communities. The method from Castella et al. (2013) has been adapted to convey the needed knowledge for co-designing innovative farming systems, visualizing land-related issues and assessing potential impacts of different land-use planning scenarios on livelihoods and ecosystem services (i.e. water, carbon, biodiversity). The community-based village development plan relies on the theory of change (www.theoryofchange.org) method to support the village community in their transitioning process to more sustainable land uses. Farming communities are empowered to design practical solutions for sustainable intensification of agriculture with an understanding of the reasons for the landscape approach to agroecological innovation.

Discussion and Conclusions

We believe that traditional extension approaches are limited in their capacity to transfer complex interrelated agroecological knowledge. A social learning approach, as proposed here, changes people's attitude towards less visible and direct impacts of agroecology. The long term impact of the approach are not be possible to measure within the short period of the project (3 years) but evidence-based research and scenario analysis help create an enabling institutional environment and local knowledge base for the dissemination of alternative farming systems in different local contexts. The expected impact pathway is as follows: local communities are empowered to manage natural resources more sustainably → Relevant knowledge supports them to meaningfully engage with other stakeholders (e.g. policy makers, private sector, large-scale investors) → A participatory engagement approach helps smallholders understand, test and monitor their natural resources → They co-design and explore together a range of visionary yet practical scenarios for different management strategies → The theory of change method is used to develop and implement community-based agriculture development plans based on the scenarios → Small but significant changes in behaviour and land management will be recorded → Based on the nature of these first changes and things that remain unchanged, strategies can be adjusted so as to further support the adoption process → This first generation of farmers will become advocates and will link with decision makers to create an enabling environment by influencing regulations and policies.

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